TUGAS 2. LOGIKA MATEMATIKA

1. Nyatakan apakah bentuk argumentasi di bawah ini dapat dikatakan valid

   $\sim p \vee q \longrightarrow r$
   $s \vee \sim q$
   $\sim t$
   $p \longrightarrow t$
   $\sim p \wedge r \longrightarrow \sim s$
   $\therefore \sim q$

2. Show that these statements are inconsistent: "If Miranda does not take a course in discrete mathematics, then she will not graduate." "If Miranda does not graduate, then she is not qualified for the job." "If Miranda reads this book, then she is qualified for the job." "Miranda does not take a course in discrete mathematics but she reads this book."

3. Express the negation of these propositions using quantifiers, and then express the negation in English.
   a) Some drivers do not obey the speed limit.
   b) All Swedish movies are serious.
   c) No one can keep a secret.
   d) There is someone in this class who does not have a good attitude.

4. Determine the truth value of each of these statements if the domain of each variable consists of all real numbers.
   a) $\forall x \exists y\ (x^2 = y)$
   b) $\forall x \exists y\ (x = y^2)$
   c) $\exists x \forall y\ (xy = 0)$
   d) $\exists x \exists y\ (x + y \neq y + x)$